

### **R e m a r k s**

Claims 1-23 are pending in the application.

Claims 1, 2, 4, 8-10, 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al. (U.S. Patent No. 6424774, hereinafter "Takeda") in view of Bjarklev et al. (U.S. Patent Application Publication No. 2004/0100681, hereinafter Bjarklev) and further in view of Cearns et al. (U.S. Patent No. 5,943,149, hereinafter Cearns).

Claim 24 is allowed.

Claims 3, 5-7, 11-13 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Each of the various rejections and objections are overcome by amendments that are made to the specification, drawing, and/or claims, as well as, or in the alternative, by various arguments that are presented.

Entry of this Amendment is proper under 37 CFR 1.116 since the amendment: (a) places the application in condition for allowance for the reasons discussed herein; (b) does not raise any new issue requiring further search and/or consideration since the amendments amplify issues previously discussed throughout prosecution; (c) satisfies a requirement of form asserted in the previous Office Action; (d) does not present any additional claims without canceling a corresponding number of finally rejected claims; or (e) places the application in better form for appeal, should an appeal be necessary. The amendment is necessary and was not earlier presented because it is made in response to arguments raised in the final rejection. Entry of the amendment is thus respectfully requested.

Any amendments to any claim for reasons other than as expressly recited herein as being for the purpose of distinguishing such claim from known prior art are not being made with an intent to change in any way the literal scope of such claims or the range of equivalents for such claims. They are being made simply to present language that is better in conformance with the form requirements of Title 35 of the United States Code or is simply clearer and easier to understand than the originally presented language. Any amendments to any claim expressly made in order to distinguish such claim from known

prior art are being made only with an intent to change the literal scope of such claim in the most minimal way, i.e., to just avoid the prior art in a way that leaves the claim novel and not obvious in view of the cited prior art, and no equivalent of any subject matter remaining in the claim is intended to be surrendered.

Also, since a dependent claim inherently includes the recitations of the claim or chain of claims from which it depends, it is submitted that the scope and content of any dependent claims that have been herein rewritten in independent form is exactly the same as the scope and content of those claims prior to having been rewritten in independent form. That is, although by convention such rewritten claims are labeled herein as having been "amended," it is submitted that only the format, and not the content, of these claims has been changed. This is true whether a dependent claim has been rewritten to expressly include the limitations of those claims on which it formerly depended or whether an independent claim has been rewritten to include the limitations of claims that previously depended from it. Thus, by such rewriting no equivalent of any subject matter of the original dependent claim is intended to be surrendered. If the Examiner is of a different view, he is respectfully requested to so indicate.

#### **Rejection Under 35 U.S.C. 103(a)**

##### **Claims 1, 2, 4, 8-10, 14-20**

Claims 1, 2, 4, 8-10, 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda in view of Bjarklev and further in view of Cearns. The Applicants respectfully traverse the rejection.

According to MPEP §2143, to establish a prima facie case of obviousness under §103, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Office Action failed to establish a prima facie case of obviousness, because the combination of Takeda, Bjarklev and Cearn's Yamanaka and Lauder fails to teach or suggest all the claim elements. In particular, the referenced art fails to teach or suggest at least the element "at least one of said at least two optical pump signals is controllably **modulated** such that a logic sequence of said input data signal is controllably switched" recited in claim 1.

The Office Action suggests the claimed "at least one of said at least two optical pump signals is controllably **modulated** such that a logic sequence of said input data signal is controllably switched" is taught by Takeda FIG. 3, selector 27. The Applicants respectfully disagree.

Takeda selector 27 does not perform *modulation* of prospective pump sources  $\lambda_{p1}$  and  $\lambda_{p2}$ , but *selection* between the two. Tankeda explains "pump light sources 22-1, 22-2 of wavelengths  $\lambda_{p1}$ ,  $\lambda_{p2}$  are **selected** by selector 27..." (col. 4, lines 53-54, emphasis added). That is, either  $\lambda_{p1}$  or  $\lambda_{p2}$  may be active at a given time, but *not* both at the same time. By contrast, the specification exemplifies the claimed "modulated" with "for example and with reference to FIG. 1, if the first optical pump 1101 is a C-band pump and the second optical pump 1102 is an L-band pump, **maintaining the C-band pump at a constant level** while **modulating** the L-band pump switches a logic sequence of an input data signal to a desired output logic sequence" (page 8, lines 18-23, emphasis added).

Therefore, in view of "modulated" as explained by the Applicants' specification, and Tankeda only teaching selecting **between** prospective pump sources, the Applicants respectfully submit that Tankeda does not teach or suggest the claimed "at least one of said at least two optical pump signals is controllably **modulated** such that a logic sequence of said input data signal is controllably switched."

Moreover, the selection process between pump sources of wavelengths  $\lambda_{p1}$  or  $\lambda_{p2}$  in Tankeda is based on one or the other pump source corresponding with respective the zero dispersion wavelengths of optical fibers 21-1 or 21-2 (col. 4, lines 49-57) as a necessary component of achieving the phase matching and thereby mixing toward which Tankeda is directed. Therefore, having both pump sources of wavelengths  $\lambda_{p1}$  or  $\lambda_{p2}$  active at any given time in Tankeda would be contrary to the collective principles of

Tankeda. Thus, the Applicants respectfully submit that not only does Tankeda fail to teach or suggest the claimed, “at least one of said at least two optical pump signals is controllably **modulated** such that a logic sequence of said input data signal is controllably switched,” but **teaches away** from the element as well.

No argument has been put forth in the Office Action suggesting that Bjarklev and/or Cearns teaches, suggests or can be combined in any fashion with Tankeda to arrive at the claimed “at least one of said at least two optical pump signals is controllably **modulated** such that a logic sequence of said input data signal is controllably switched” as recited in claim 1. The Applicants respectfully submit the referenced art fails to do so as well, and thus like Tankeda, also fails to teach or suggest the claimed invention in any combination.

Independent claim 18 recites similar relevant limitations to claim 1, and the Applicants respectfully submit claim 18 is patentable for at least the same reasons provided for independent claim 1.

Claims 2, 4, 8-10, 14-17 and 19-20 depend, directly or indirectly, from independent claims 1 or 18, respectively, while adding additional elements. Therefore, these dependent claims are also non-obvious and are patentable over Takeda in view of Bjarklev and Cearns under 35 U.S.C. §103 for at least the same reasons discussed above in regards to independent claims 1 and 18.

Applicants submit that claims 1, 2, 4, 8-10 and 14-20 are allowable under 35 U.S.C. 103. The Applicants respectfully request the Examiner withdraw the rejection.

#### **Allowed Claims**

Applicants thank the Examiner for the allowance of claim 24.

#### **Claim Objections**

Claims 3, 5-7, 11-13 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The objection is traversed.

Applicants thank the Examiner for the indication of allowable subject matter with respect to these claims. However, for at least the reasons discussed above, the base

claims are allowable under 35 U.S.C. 103 and, as such, claims 3, 5-7, 11-13 and 21 are also allowable in their existing dependent form.

The Applicants respectfully request the Examiner withdraw the objection.


**Conclusion**

It is respectfully submitted that the Office Action's rejections have been overcome and that this application is now in condition for allowance. Reconsideration and allowance are, therefore, respectfully solicited.

If, however, the Examiner still believes that there are unresolved issues, the Examiner is invited to call Eamon Wall at (732) 530-9404 so that arrangements may be made to discuss and resolve any such issues.

Respectfully submitted,

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